

WHAT IS CLAIMED IS:

1. An apparatus, comprising:
  - a slot section having electrically conductive material which defines a slot with first and second ends;
  - an electrically conductive element extending generally transversely to said slot in the region of said first end thereof; and
  - a balun portion communicating with said first end of said slot, said balun portion having a high impedance and being configured to provide a selected degree of absorption of electromagnetic energy.
2. An apparatus according to Claim 1, wherein said degree of absorption is selected so that a percentage of energy which arrives through said conductive element and is absorbed is within a range of approximately 5% to 20%.
3. An apparatus according to Claim 2, wherein said percentage of energy is with a range of approximately 9% to 15%.
4. An apparatus according to Claim 3, wherein said percentage of energy is substantially 12%.
5. An apparatus according to Claim 1, wherein said balun portion includes a resistive portion which facilitates said selected degree of absorption of electromagnetic energy.

6. An apparatus according to Claim 5, wherein said resistive portion includes a sheetlike portion which extends approximately transversely to a centerline of said slot, and which is spaced from said first end of said slot.

7. An apparatus according to Claim 5, wherein said resistive portion includes a plurality of sheetlike portions which each extend approximately transversely to a centerline of said slot, and which are spaced from said first end of said slot by respective different distances.

8. An apparatus according to Claim 5, wherein said balun portion includes a filler portion made of a material with a low dielectric constant.

9. An apparatus according to Claim 8, wherein said resistive portion includes a sheetlike portion which extends approximately transversely to a centerline of said slot, and which is spaced from said first end of said slot; and

wherein said filler portion includes first and second sections which are disposed on opposite sides of said sheetlike portion.

10. An apparatus according to Claim 8,  
wherein said resistive portion includes first and  
second sheetlike portions which each extend approximately  
5 transversely to a centerline of said slot, and which are  
spaced from said first end of said slot by respective  
different distances; and

wherein said filler portion includes first, second  
and third sections, said first sheetlike portion being  
10 disposed between said first and second sections, and said  
second sheetlike portion being disposed between said  
second and third sections.

11. An apparatus according to Claim 5, wherein said  
15 balun portion includes an electrically conductive portion  
which, within a plane containing the centerline of said  
slot, extends completely around said resistive portion,  
except where said first end of said slot communicates  
with said balun portion.

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12. An apparatus according to Claim 5, wherein said  
balun portion includes:

a filler portion made of a material with a low  
dielectric constant; and

25 an electrically conductive portion which, within a  
plane containing the centerline of said slot, extends  
completely around said resistive portion and said filler  
portion, except where said first end of said slot  
communicates with said balun portion.

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13. An apparatus, comprising:

a slot section having electrically conductive material which defines a plurality of slots that each  
5 have a first end and a second end;

a plurality of electrically conductive elements which each extend generally transversely to a respective said slot in the region of said first end thereof; and

a plurality of balun portions which each communicate  
10 with said first end of a respective said slot, each said balun portion having a high impedance and being configured to provide a selected degree of absorption of electromagnetic energy.

15 14. An apparatus according to Claim 13, wherein said degree of absorption is selected so that a percentage of energy which arrives through each said conductive element and is absorbed is within a range of approximately 5% to 20%.

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15. An apparatus according to Claim 14, wherein said percentage of energy is with a range of approximately 9% to 15%.

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16. An apparatus according to Claim 15, wherein said percentage of energy is substantially 12%.

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17. An apparatus according to Claim 13, wherein each said balun portion includes a resistive portion which facilitates said selected degree of absorption of electromagnetic energy.

18. An apparatus according to Claim 17,  
wherein said slots have centerlines which are all  
approximately parallel to each other; and

5 including a sheet of resistive material which is  
spaced from said first end of said slot, which extends  
approximately transversely to the centerlines of said  
slots, and which has a plurality of portions that each  
serve as said resistive portion of a respective said  
balun portion.

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19. An apparatus according to Claim 17,  
wherein said slots have centerlines which are all  
approximately parallel to each other; and

15 including a plurality of sheets of resistive  
material which are spaced from said first end of said  
slot by respective different distances, which each extend  
approximately transversely to the centerlines of said  
slots, and which each have a plurality of portions that  
each serve as part of said resistive portion of a  
20 respective said balun portion.

20. An apparatus according to Claim 17, wherein  
each said balun portion includes a filler portion made of  
a material with a low dielectric constant.

21. An apparatus according to Claim 20,  
wherein said slots have centerlines which are all  
approximately parallel to each other;

5 including a sheet of resistive material which is  
spaced from said first end of said slot, which extends  
approximately transversely to the centerlines of said  
slots, and which has a plurality of portions that each  
serve as said resistive portion of a respective said  
10 balun portion; and

including first and second layers which are made  
from said material with said low dielectric constant and  
which each include a plurality of sections that each  
serve as a part of said filler portion of a respective  
15 said balun portion, said sheet of resistive material  
being disposed between said first and second layers.

22. An apparatus according to Claim 20,  
wherein said slots have centerlines which are all  
approximately parallel to each other;

5 including first and second sheets of resistive  
material which are spaced from said first end of said  
slot by respective different distances, which each extend  
approximately transversely to the centerlines of said  
10 slots, and which each have a plurality of portions that  
each serve as part of said resistive portion of a  
respective said balun portion; and

including first, second and third layers which are  
made from said material with said low dielectric  
constant, and which each include a plurality of sections  
15 that each serve as a part of said filler portion of a  
respective said balun portion, said first sheet being  
disposed between said first and second layers and said  
second sheet being disposed between said second and third  
layers.

23. An apparatus according to Claim 17,  
including an electrically conductive layer which  
extends approximately transversely to the centerlines of  
said slots and which is disposed on a side of said balun  
portions remote from said slots; and  
including a plurality of electrically conductive  
parts which are spaced from each other, which each extend  
approximately parallel to the centerlines of said slots,  
and which are electrically coupled to said electrically  
conductive layer and to the electrically conductive  
material of said slot section;  
wherein each said balun portion includes portions of  
two of said parts and a portion of said electrically  
conductive layer which collectively serve as an  
electrically conductive portion that, within a plane  
containing the centerline of the associated slot, extends  
completely around said resistive portion of that balun  
portion, except where said first end of the associated  
slot communicates with that balun portion.
24. An apparatus according to Claim 23, including a  
plurality of coaxial feeds which extend through said  
electrically conductive parts and which each have a  
center conductor with a portion that serves as a  
respective said electrically conductive element.



25. An apparatus according to Claim 17,  
wherein each said balun portion includes a filler  
portion made of a material with a low dielectric  
constant;

5 including an electrically conductive layer which  
extends approximately transversely to the centerlines of  
said slots and which is disposed on a side of said balun  
portions remote from said slots; and

10 including a plurality of electrically conductive  
parts which are spaced from each other, which each extend  
approximately parallel to the centerlines of said slots,  
and which are electrically coupled to said electrically  
conductive layer and to the electrically conductive  
material of said slot section;

15 wherein each said balun portion includes portions of  
two of said parts and a portion of said electrically  
conductive layer which collectively serve as an  
electrically conductive portion that, within a plane  
containing the centerline of the associated slot, extends  
20 completely around said resistive portion and said filler  
portion of that balun portion, except where said first  
end of the associated slot communicates with that balun  
portion.

26. A method of operating an apparatus which includes a slot section having electrically conductive material which defines a slot with first and second ends, an electrically conductive element extending generally transversely to said slot in the region of said first end thereof, and a balun portion communicating with said first end of said slot, comprising:

5 configuring said balun portion to have a high impedance; and

10 absorbing a selected degree of electromagnetic energy in said balun portion.

27. An apparatus according to Claim 26, including selecting said degree of absorption so that a percentage of energy which arrives through said conductive element and is caused to travel through said slot toward said second end thereof is within a range of approximately 80% to 95%.

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28. An apparatus according to Claim 27, wherein said selecting of said degree of absorption is carried out so that said percentage of energy is within a range of approximately 85% to 90%.

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29. An apparatus according to Claim 28, wherein said selecting of said degree of absorption is carried out so that said percentage of energy is substantially 88%.

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30. An apparatus according to Claim 26, including configuring said balun portion to include a resistive portion which facilitates said selected degree of absorption of electromagnetic energy.

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31. An apparatus according to Claim 30, including configuring said balun portion to include a filler portion made of a material with a low dielectric constant.

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